Chatterbots

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In this project you'll learn how to code one robot to talk to another one.
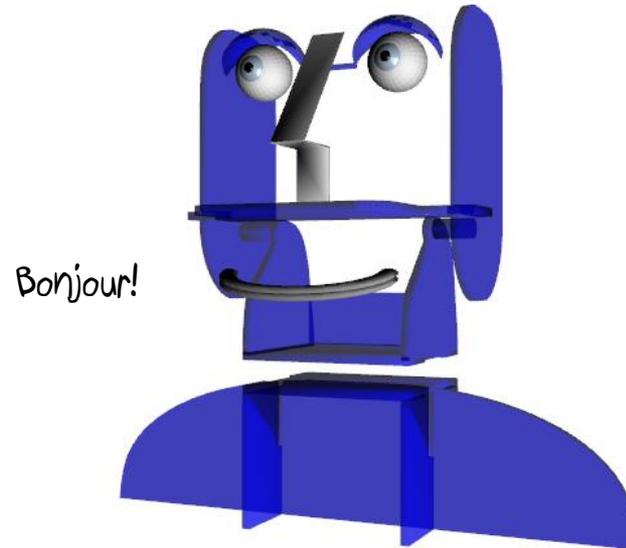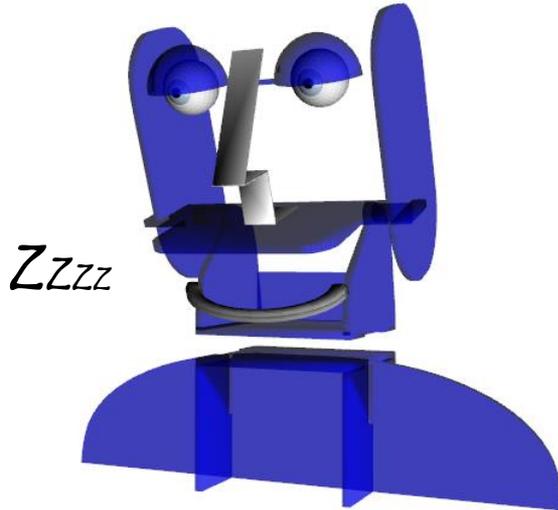

We've split the project into steps:

Step 1: Wake up, sleepy head
Step 2: Turning to look at a friend
Step 3: Chatting
Step 4: Lip Synching
Step 5: A chatting sequence
Step 6: Blinking
Step 7: Eye Moves
Step 8: Smiling and frowning

Zzzz

Bonjour!

1. Press Reset (Ohbot should 'sleep')

2. Add instructions to make Ohbot open its eyelids when the space key is pressed

when space key pressed
set LidBlink to 0 ← Try different values between 0 and 10

3. Add another instruction to make Ohbot lift its head too

when space key pressed
set LidBlink to 0
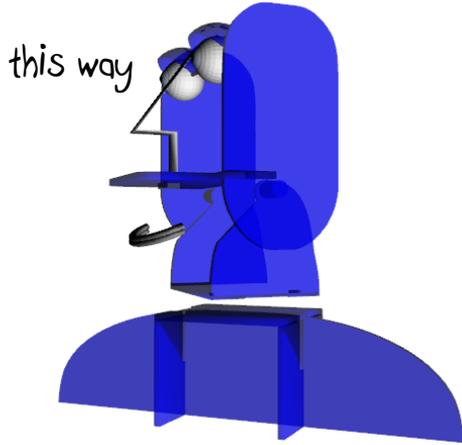set HeadNod to 0 ← Try different values between 0 and 10

Done that?
Can you find a way of making Ohbot open its eyes, wait a second then lift its head? Can you make Ohbot wake up slowly? Use reset to return Ohbot to its sleeping position.
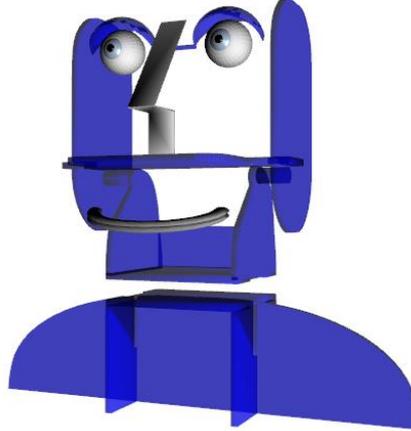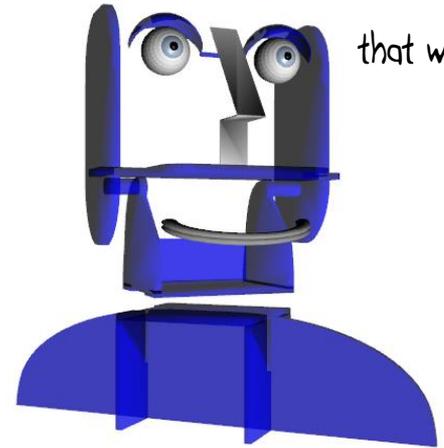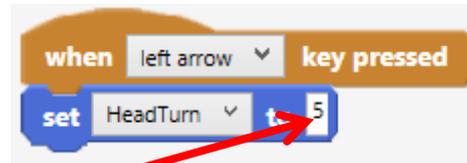
◁ 3 ▷

Step 2: Turning to look at my friend

this way

straight ahead

that way

1. Add instructions to make Ohbot turn one way and the other so that it can look at its friend

when [right arrow ▾] key pressed
set [HeadTurn ▾] to 5

when [left arrow ▾] key pressed
set [HeadTurn ▾] to 5

Try different values between 0 and 10

2. Add another instruction to make Ohbot return to straight ahead when the space key is pressed

when [space ▾] key pressed
set [HeadNod ▾] to 5
set [LidBlink ▾] to 10
set [HeadTurn ▾] to 5

Done that?
Can you find a way of making Ohbot look up and down too?

◁ 4 ▷

Step 3: Let's chat

1. Add instructions for a friendly greeting to your robot's friend

   when `1 ∨` key pressed
   say `Hello Claudia` until done

   It doesn't have to be Hello! Perhaps robots use a special robot greeting when meeting to each other.

2. Ask a question

   when `2 ∨` key pressed
   say `Do you like onions?` until done
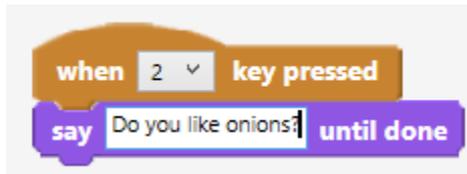
   Your robot doesn't have to ask about onions!

2. And write a reply to your robot's friend's question!

   when `3 ∨` key pressed
   say `Of course not! I am a robot.` until done

   Who knows how the answer goes?

Done that?

Can you and your friend make your robots chat by pressing the keys in the right sequence? This way of controlling a robot is sometimes called Wizard of Oz robotics because just like in the film the robot is directly controlled by a human and is not automatic.
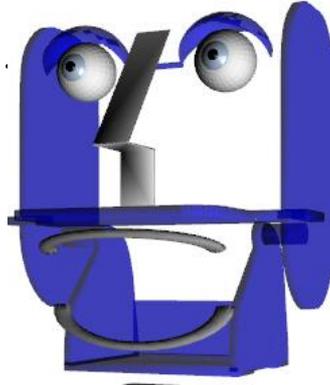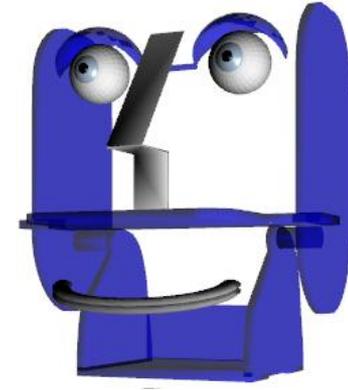
Step 4: Lip synching – the hard way

1. Make Ohbot open its mouth...   ....and close it

```
when  O  key pressed
set  TopLip  to  10
set  BottomLip  to  10
```

```
when  C  key pressed
set  TopLip  to  5
set  BottomLip  to  5
```

2. Add these instructions before and after a Say block to make Ohbot open its mouth before speaking and close it afterwards:

```
when  2  key pressed
set  TopLip  to  10
set  BottomLip  to  10
say  Do you like onions?  until done
set  TopLip  to  5
set  BottomLip  to  5
```

Done that?

Doesn't look too realistic does it? Can you find a way of improving how Ohbot moves its lips when it speaks? We'll show you one way on the next page.
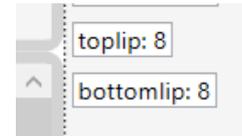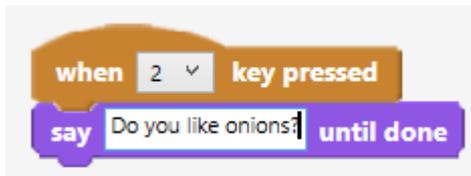
1. Put a tick in the box next to the sensor variables for the toplip and bottomlip.

2. Now run a speech instruction and watch the values for the top lip and bottom lip vary

3. Try the instructions below. This will keep setting the position of lips to the sensor values for the toplip and bottom lip.

Step 5: Blinking like you

1. How often do you blink and how long is a blink?

2. Try these instructions to open and close Ohbot's eyelids:

   ```
   when  A ∨  key pressed
   set  LidBlink ∨  to 10
   ```

   ```
   when  S ∨  key pressed
   set  LidBlink ∨  to 0
   ```

3. Can you make Ohbot blink just like you do?

4. Can you arrange these instructions to make Ohbot blink automatically, just like you?

   ```
   when 🚩 clicked

   set  LidBlink ∨  to 10

   set  LidBlink ∨  to 0
   ```

   ```
   forever

   wait 1 secs

   wait 1 secs
   ```

There's a way of doing it behind here

Done that?

Doesn't look too realistic does it? Nobody blinks every other second for one second! Can you find a way of making Ohbot's blinking more realistic by altering the wait? You could also try using the random instruction:
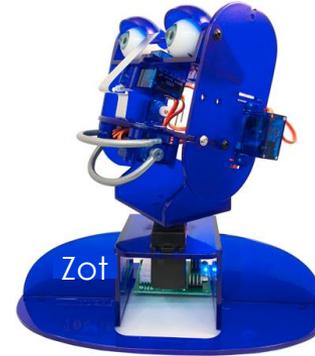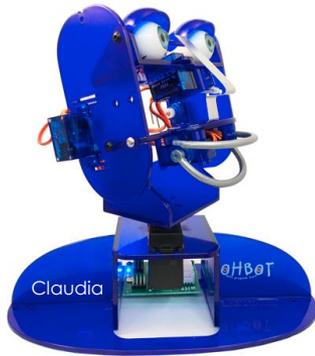
```
pick random 0 to 10
```

Step 6: Sequencing Chat

1. Sequence the conversation so that it runs automatically.

Claudia

Zot

```
when  1 ▾  key pressed
wait  2  secs          ← Try different values (you can use decimals too)
say  Oh hi Zot   until done
wait  2  secs
say  Yes I do. I can eat them all day long. How about you?   until done
wait  1  secs
say  You don't know what you're missing!   until done
```

```
when  1 ▾  key pressed
say  Hello Claudia   until done
wait  2  secs
say  Do you like onions?   until done
wait  2  secs
say  Of course not! I am a robot   until done
```

2. Add motion instructions to sequence movements too.

```
when  1 ▾  key pressed
set  HeadTurn ▾  to  0
say  Hello Claudia   until done
wait  2  secs
say  Do you like onions?   until done
wait  2  secs
say  Of course not! I am a robot   until done
set  HeadTurn ▾  to  5
```
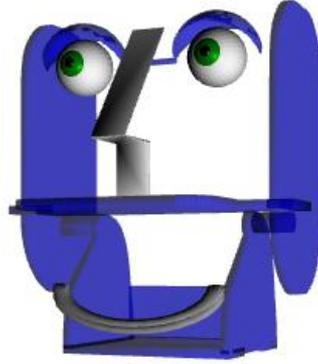
Step 7: Smiling and frowning

1. Make Ohbot smile

```
when  U ⌄  key pressed
set  BottomLip ⌄  to  10
set  TopLip ⌄  to  0
```
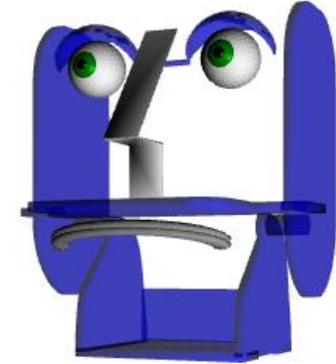
...and frown

```
when  N ⌄  key pressed
set  TopLip ⌄  to  10
set  BottomLip ⌄  to  0
```

2. Create a variable

```
Make a Variable
☐  Lip Sync On
set  Lip Sync On ⌄  to  0
change  Lip Sync On ⌄  by  1
```

3. Add a condition to the forever loop so that the lip sync only works if the variable is set to 1

```
when ⚑ clicked
forever
  if  Lip Sync On = 1  then
    set  TopLip ⌄  to  toplip
    set  BottomLip ⌄  to  bottomlip
```

4. Set Lip Sync On to 1 before speech and 0 after it so that you can set the lips to a smile.

```
when  1 ⌄  key pressed
set  Lip Sync On ⌄  to  1
say  Hello Cynthia  until done
set  Lip Sync On ⌄  to  0
set  TopLip ⌄  to  10
set  BottomLip ⌄  to  0
wait  2  secs
```